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First records of *Craterium aureonucleatum*, *Perichaena quadrata,* and *Physarum mutabile* in Italy

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Abstract — Three species of *Mycetozoa*, new for Italy, were identified in garrigues and maquis ecosystems on the volcanic island of Pantelleria (Sicily). The finding of *Craterium aureonucleatum*, *Perichaena quadrata,* and *Physarum mutabile* widens their distribution in Europe and identifies new substrata.

Key words — biodiversity, Mediterranean area, ecology

Introduction

Within a wide-scoped biodiversity census, field investigations were carried out on the island of Pantelleria (Trapani province, southwest Sicily, Italy). In his checklist of *Mycetozoa* in the Mediterranean area, Lado (1994) reported 421 taxa, of which 164 were recorded from Italy. To increase the knowledge of mycetozoan diversity in Italy, we focused primarily on the collection of *Mycetozoa* in Mediterranean forest ecosystems characterizing the plant landscape of Pantelleria (Gianguzzi 1999). The *Erico arboreae-Quercetum ilicis typicum* plant association and *Myrtus communis* facies (Brullo et al. 1977) is dominated by *Quercus ilex* L. in the tree layer and shrubs such as *Arbutus unedo* L., *Erica arborea* L., *Pistacia lentiscus* L., *Phillyrea latifolia* L., and *Myrtus communis* L. The degradation stages of the association are characterized by garrigues with *Rubus ulmifolius* Schott. and *Euphorbia dendroides* L. (Brullo et al 1977).

The three myxomycete species collected — identified as *Craterium aureonucleatum* (*Physaraceae*), *Perichaena quadrata* (*Trichiaceae*), and *Physarum mutabile* (*Physaraceae*) — are new records for Italy.

Materials & methods

The investigation was carried out weekly on Pantelleria from October 2007 to May 2009 in Mediterranean maquis and garrigues ecosystems. The collected samples were identified by observing sporocysts in a water solution under Leica DMLB microscope.

Nomenclature of the recorded taxa follows MycoBank (http://www.mycobank.org/). The macro- and microscopic features of peridium, stipe (if present), hypothallus, capillitium, columella and/or pseudocolumella, and spores were observed. The habitat type was noted for each recorded species. Voucher specimens were deposited in Herbarium Mediterraneum Panormitanum, Palermo (PAL).

Species recorded

Craterium aureonucleatum Nann.-Bremek. Fig. 1

Fig. 1: *Craterium aureonucleatum*. [PAL 001(Myz)]
a. Sporocysts. b. Spores. c. A net with yellow nodes in the capillitium.

Sporocysts with a short stem, grouped, sub-conical, 0.3–0.5 mm in diameter and height, orange-dull brown. Hypothallus like a wide membranous disk, ridged, orange, stem not exceeding 0.2 mm in height. Peridium with two appressed layers, translucent. The outer layer of peridium is rather uniform while the inner layer is membranous. The two layers are orange at the base, colorless or yellow in the upper part. The dehiscence of the peridial apex is circular, forming a cup-shaped structure. The capillitium consists of a net with small meshes, pale yellow with numerous cells, often branched, calcareous yellow knots, pseudocolumella orange-yellow. Spore print dark brown; spores dark brown-lilac in transmitted light, 9–10 µm diam., covered by light tiny warts.

Specimen examined: **ITALY. Sicily**, Trapani province, **Pantelleria**, Cuddia di Mida and Montagna Grande, on litter of *Quercus ilex* L. and *Erica arborea* L. 10 Nov 2008, coll. R. Compagno [PAL 001 (Myz)].

Comments – The sporocyst morphology in our collected specimens differs slightly from the original description of Ing (1999), where sporocysts are described as sub-globose, not sub-conical. This difference may be due to ecological conditions and infraspecific variability.

Craterium aureonucleatum has been recorded from Canary Islands, Germany, Netherlands, and Scotland (Beltrán & al. 2004, Ing 1999, Nannenga-Bremekamp 1991).

Perichaena quadrata T. Macbr. Fig. 2

Fig. 2: *Perichaena quadrata* [PAL 002(Myz)]. a. Sporocysts. b. Spores and capillitium.

Sporocysts rarely single, usually appressed with polyhedral shape, discoid, sometimes lengthened, purple-brown or entirely black, with exudates of calcium oxalate, 0.1–0.5 mm in diameter. Hypothallus extended under the sporocysts, dark brown. Peridium double, initially adherent, the other layer thick and opaque, brownish with inclusion of the inner membrane and translucent, pale yellow, smooth. The capillitium consists of thin tubules, usually elastic and abundant, sometimes with rings that segment the tubules. Spore print yellow; spores yellow in transmitted light, 9–12 µm diam., lightly punctate.

Specimen examined: **ITALY. Sicily**, Trapani province, **Pantelleria**, Bugeber, on dead stems of *Rubus ulmifolius* Schott, 15 Feb 2009, coll. R. Compagno [PAL 002 (Myz)].

Comments – *Perichaena quadrata* has also been recorded from Africa, Asia, Australasia, Europe (including France and Spain), and North America (Lado 1994, The Eumycetozoan Project – http://slimemold.uark.edu/index.htm).

Physarum mutabile (Rostaf.) G. Lister Fig. 3

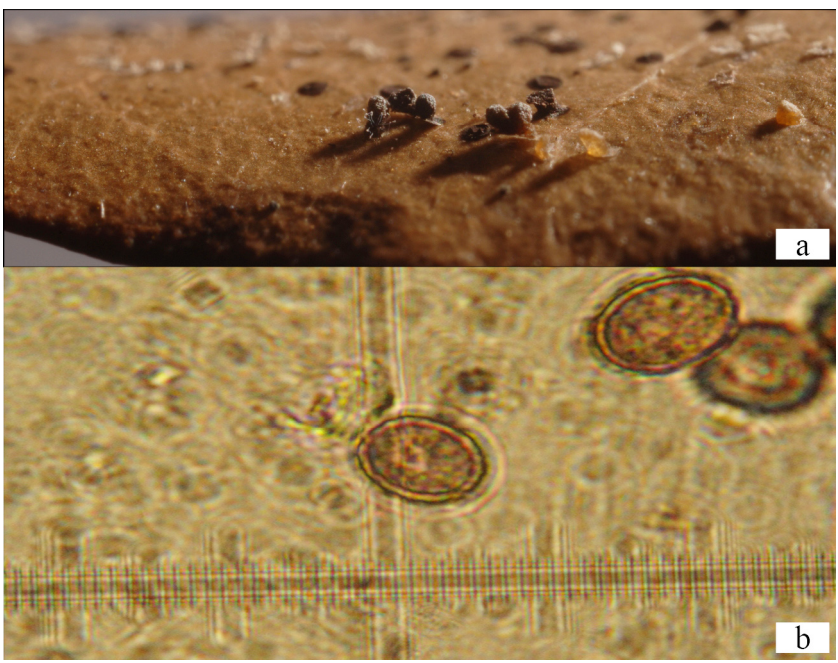

Fig. 3: *Physarum mutabile* [PAL 003(Myz)]. a. Sporocysts. b. Spores.

Sporocysts with a short stipe; sub-globose; 0.3–0.6 mm wide and 2 mm long; white or pale grey. Hypothallus membranous, colorless, pale yellow or pale brown, sometimes with exudates. If present, the stipe is short, yellow to ochre,

usually covered by exudates. Peridium single, thin, colorless, smooth or rarely with calcium carbonate flakes, upper crack irregular. Capillitium persistent, elastic, with small meshes and white nodules. Pseudocolumella located in the center of sporocyst or at the base of plasmodiocarp. Spore print black; spores purple-brown in transmitted light, 7–10 µm diam., densely spinulose with spines sometimes grouped.

Specimen examined: **ITALY. Sicily**, Trapani province, **Pantelleria**, Montagna Grande, on litter of *Q. ilex* L. and *E. arborea* L., 18 Oct 2007, coll. R. Compagno [PAL 003 (Myz)].

Comments – *P. mutabile* has been recorded from Africa, Asia, Europe, North America and South America (Emoto 1977, Ing 199, Lado 1994, Nannenga-Bremekamp 1991, The Eumycetozoan Project – http://slimemold.uark.edu/index.htm).

Conclusions

The new records of *C. aureonucleatum*, *P. quadrata* and *P. mutabile* extend their known European distribution into Italy and add valuable information regarding substrata.

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Literature cited

Beltrán E, Lado C, Barrera J, Gonzáles E. 2004. Myxomycetes diversity in the laurel forest of Garajonay National Park (Canary Islands, Spain). Systematics and Geography of Plants 74: 159–173.

Brullo S, Di Martino A, Marcenò C. 1977. La vegetazione di Pantelleria (studio fitosociologico). Pubblicazioni Istituto Botanico Università di Catania, pp. 5-110. Tipografia Coniglione, Catania.

Emoto Y. 1977. The myxomycetes of Japan. Sangyo Tosho Publishing Co., Ltd. Tokyo, Japan. 263 p.

Gianguzzi L. 1999. Vegetazione e bioclimatologia dell'isola di Pantelleria (Canale di Sicilia). Braun-Blanquetia 22: 3-70.

Ing B. 1999. The myxomycetes of Britain and Ireland: an identification handbook. The Richmond Publishing Co. Ltd., England. 374 p.

Lado C. 1994. A checklist of myxomycetes of the Mediterranean countries. Mycotaxon 52: 117–185.

Nannenga-Bremekamp NE. 1991. A guide to temperate myxomycetes. Biopress Limited, England. 409 p.